Rapid Prototyping computer System Report

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1 Function Requirements

1.1 Challenge

The Childrens School at CMU challenged the Rapid Design and Prototyping for Computer systems class to:

- Help track the locations and activities of all members of the school
- Help make dismissal an easier and less stressful process

The whole class discussed together and had a vision scenario. According to the Human Computer Interaction Group, we have known the functions we need to implement and the other requirements we have to complete for connections with other group.

1.2 Functional Requirements

1.2.1 Client Requirements

1. Show the information to the parents and the teachers
2. Provide user control, for example: log in/out
3. Provide message service, send and receive message or notification between teachers and parents
4. Show the result of data analysis, or the graph of data visualization
5. Provide a list of children need to be dismissed to teachers.

1.2.2 Implementation Requirements

Our group member compared the mainstream database, programming language, server and decided the ones which suit the situation most.

1. Read and send data from database
2. Provide API to Data Visualization Group to show the result

2 Feature Comparison

Our group member compared the mainstream database, programming language, server and decided the ones which suit the situation most.

2.1 Database

SQLite is very small and fast .So it is very good for a mobile phone. Besides ,SQLite can be applied to WEB and APP ,which others cant. Finally we choose SQLite.

Database	Cost	Platform	Company	Language	Character
SQLite	Free	Windows, Linux, Unix	D. Richard-Hipp	Tcl, C#, PHP, Java	Small, Fast
MySQL	Free	Windows, Linux, Unix	MySQL AB	PHP, Perl, Python	Open source, Small, Mediocre online support
Oracle	Expensive	Windows, Linux, Unix	Oracle		
SQL Server	$931	Windows, Linux, Unix	Microsoft	XML	Safe, Efficient, Smart, Big

Table 1: Database Comparison

2.2 Programming Language

Each of us have different skills. So we divide the work into PC, APP and website. We use C# to make a executable program in PC ,use Java to make APP and use HTML, css, JavaScript to make the website.

Language(Framework)	MVC Framework	Testing Framework	Security Framework	Licence
C++(CppCMS)	Yes	No	Yes	MIT
Spring	Yes	Mock Objects, Unit tests	Spring Security	Apache 2.0
Python(Django)	Yes	Yes	Yes	BSD

Table 2: Programming Language Comparison

2.3 Server

Cloud Server is maintained by professional team, thus has better Security. However, a PC owned by child school can bear almost all of the tasks and it's free. So we select Local server, since it could fulfill our demands, and is much cheaper.

Server Type	Price	Storage	Security & Stability
Local Server	15k(New Server)/Free(PC)	Local Hard Disk	Fair
Cloud Server	22.50/M	0.24/GB/M	High

Table 3: Server Comparison

3 Various Ends

We designed various ends to fulfill different demand. Below are their introduction, respectively.

3.1 Android

App provides different entry for different user, Parent and teacher has different interface and different authority limit. For example, parents only have access to information of their own kids, while teacher can monitor any child in his/her class (possibly the whole school).

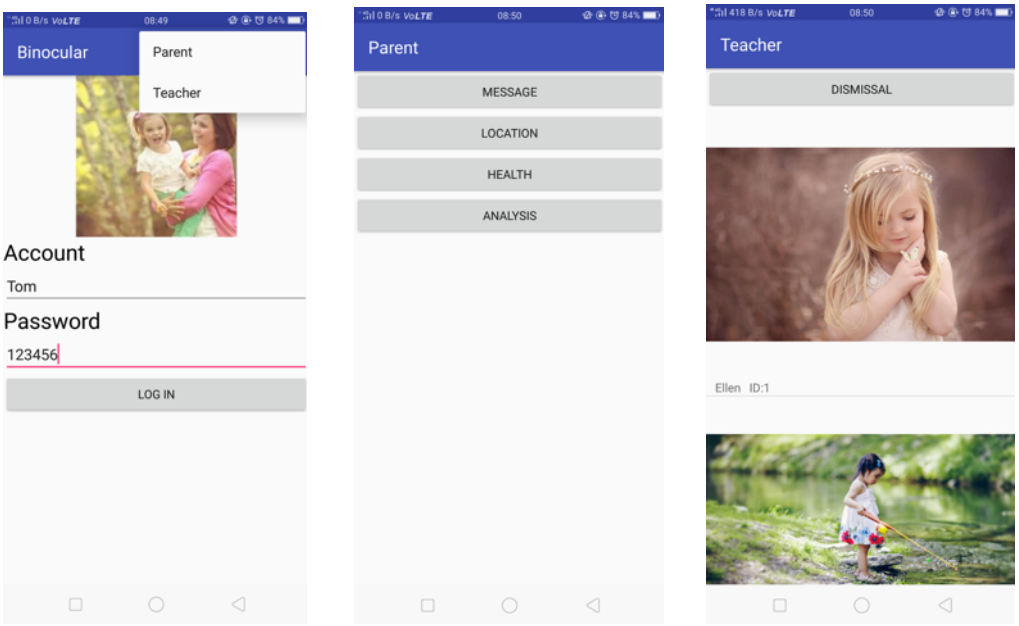

Figure 1: Different Interfaces

3.2 Parent Interface Breakdown

4 Individual Contribution

5 Lessons Learned

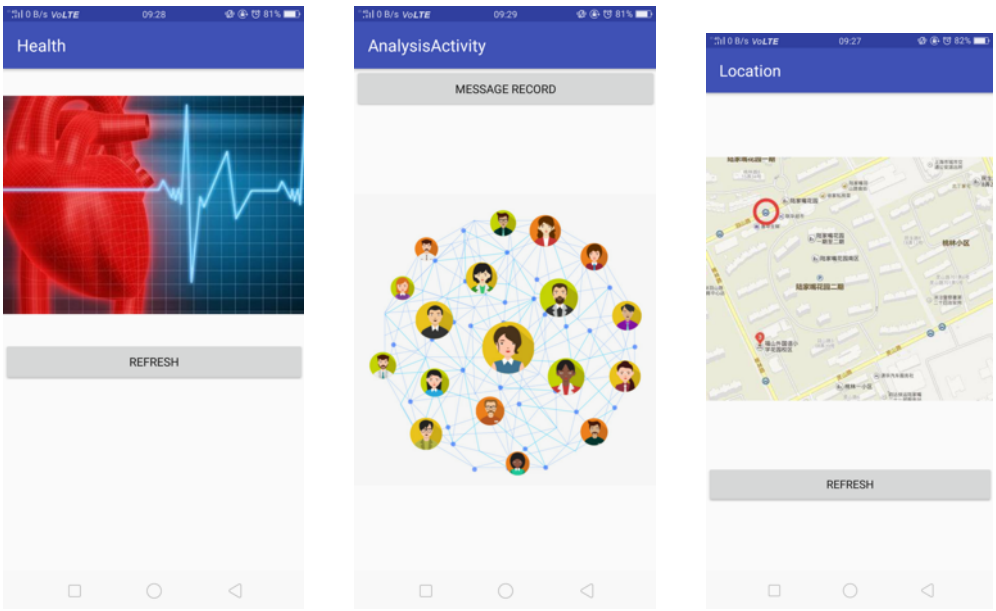

Figure 2: Different Interfaces